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Measurement of activated species generated by 60 Hz excited atmospheric pressure Ar plasma in atmospheric gas KEIGO TAKEDA, JEROME JOLIBOIS, KENJI ISHIKAWA, HIROMASA TANAKA, Graduate School of Engineering, Nagoya University, HIROYUKI KANO, NU Eco-Engineering Co., Ltd., MAKOTO SEKINE, MASARU HORI, Graduate School of Engineering, Nagoya University — Atmospheric pressure plasmas have a wide field of applications. To improve the performance, it needs to diagnose the behaviors of activated species generated by plasma discharge and to study about the gas-phase reactions in atmospheric pressure. Moreover, plasma treatments are frequently carried out under atmospheric condition without purge gases. In this study, behaviors of activated species generated by the atmospheric pressure plasma under atmospheric condition have been measured by using LIF spectroscopy. Firstly, concentration of the ground state nitrogen monoxide (NO) was measured. The wavelength of laser light for the excitation of NO was 226.3 nm. The fluorescence was observed on A-X(0, 2) band around 247 nm. The AC excited atmospheric pressure plasma with pure Ar gas was generated under atmospheric condition. The flow rate of Ar gas was fixed at 3 slm. The atmospheric condition was the humidity of 40% and ambient temperature of 25 °C. Concentration of NO has been measured as a function of distance from a jet slit of plasma head. The length of plasma jet was around 10 mm. The results show that the concentration of NO has a maximum at 10 mm from plasma head, and then decreases. This means that the influence of ambient gases was largest in the edge region of plasma.

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